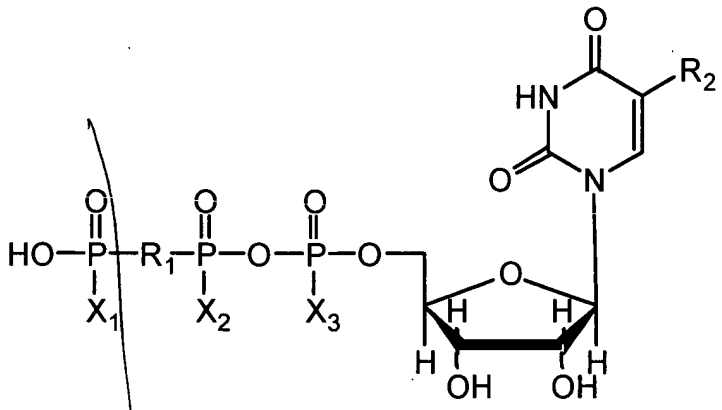
Formula I



wherein:

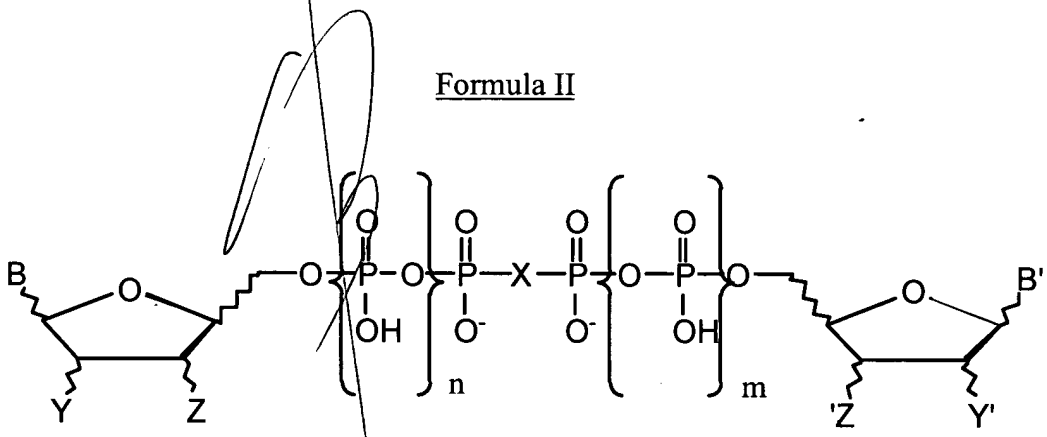
X_1, X_2 and X_3 are each independently either O^- or S^-;

R_1 is O, imido, methylene or dihalomethylene;

R_2 is H or Br; preferably, R_2 is H; or

[

Formula II



wherein:

X is oxygen, methylene, difluoromethylene, imido;

n = 0, 1, or 2;

m = 0, 1, or 2;

n + m=0,1, 2, 3, or 4; and

B and B' are each independently a purine residue or a pyrimidine residue linked through the 9- or 1- position, respectively;

Z = OH or N_3;

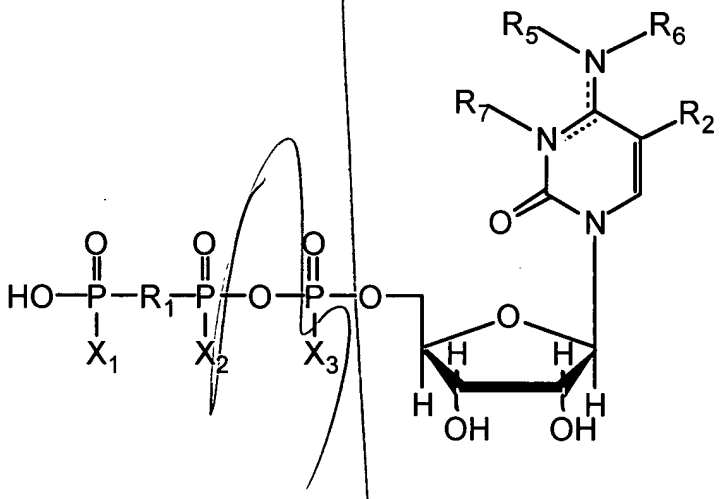
Z' = OH or N_3;

Y = H or OH;

Y' = H or OH;

provided that when Z is N_3, Y is H or when Z' is N_3, Y' is H; or]

Formula III



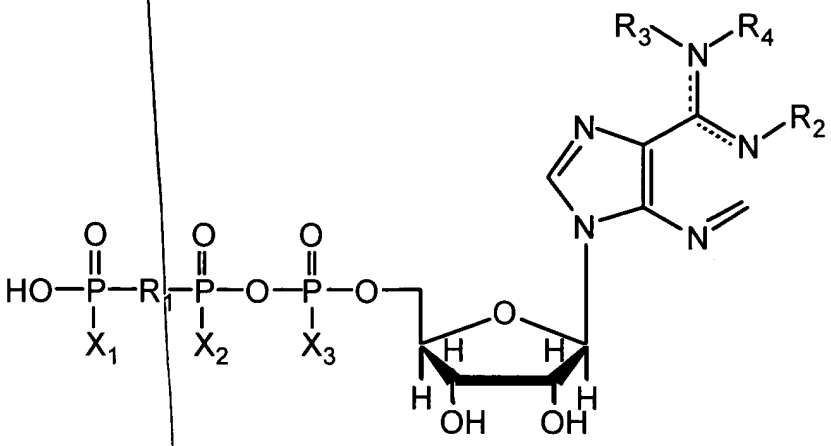
wherein:

R_1, X_1, X_2 and X_3 are defined as in Formula I;

R_5 and R_6 are H while R_7 is nothing and there is a double bond between N-3 and C-4 (cytosine), or

R_5, R_6 and R_7 taken together are -CH=CH-, forming a ring from N-3 to N-4 with a double bond between N-4 and C-4 (3,N^4-ethenocytosine) optionally substituted at the 4- or 5-position of the etheno ring; or

Formula IV



wherein:

R_1, X_1, X_2, and X_3 are defined as in Formula I;

R_3 and R_4 are H while R_2 is nothing and there is a double bond between N-1 and C-6 (adenine), or

R_3 and R_4 are H while R_2 is O and there is a double bond between N-1 and C-6 (adenine 1-oxide), or

R_3, R_4, and R_2 taken together are -CH=CH-, forming a ring from N-6 to N-1 with a double bond between N-6 and C-6 (1,N6-ethenoadenine);

or pharmaceutically acceptable esters or salts thereof.

Cancel Claims 2 and 3.

4. (Reiterated) The method of claim 1 wherein R_2 of Formula I is H.

Cancel Claim 5.